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REMARKS

1. The Office action mailed January 17, 2003 has been reviewed. Claims 1-13 and 15-17 are pending in this application. Claims 11-13 have been withdrawn from consideration.
2. Claim 1 has been amended to more particularly point out and distinctly claim the invention. Support for the amendment is found in the specification at page 4, lines 11-30, page 6, lines 6-29, and Figure 2. Since no new matter has been added by this amendment, it is respectfully submitted that it should be entered.
3. Claim 7 has been amended to depend from claim 1. Support for this amendment is found on page 7, lines 2-5, 18-19, Comparative Example C and Inventive Example Three. Since no new matter has been added by this amendment, it is respectfully submitted that it should be entered.
4. Claims 7-10, 15-17 stand rejected under 35 U.S.C. 112 as being indefinite for failing to define the term "small prill holes." Claim 7 has been amended to more particularly point out and distinctly claim the invention. As this objection is now moot, it is respectfully requested that the rejection of claim 7 and dependent claims 8-10 and 15-17 be withdrawn.
5. Claims 1-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk, U.S.P. 3,083,406, in view of Holland et al. (1995), Frenken et al., U.S.P. 3,988,398 and Otsuka et al., U.S.P. 3,539,326. Hoogendonk is relied on to show the general method of prilling a thixotropic molten fertilizer and mechanically agitating a molten mixture in a prill head. Holland et al. (1995) is relied upon as evidence that thixotropic materials are shear thinning. Frenken et al. is relied on as teaching mechanical agitation of essentially the entire liquid volume in a prill head at speeds in the range of the present invention. Otsuka et al. is relied on as teaching the steps of providing a first molten component, mixing a second component and reacting the components for a time/temperature combination.

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It is respectfully submitted that the person of ordinary skill in the art would not and could not combine the teachings of these references in the manner suggested, except by hindsight in view of the present invention. In several respects, the several prior art references cited are incompatible with one another and with the present invention. As examples please note the following:

- Otsuka et al. disclose that combining materials in a melt and mixing causes the melt viscosity to rise. "When this was further stirred, in 5 minutes the viscosity began to rise, thereafter fluidity was quickly lost and it became impossible to prill." (Col. 8, lines 48-50). This disclosure is incompatible with Hoogendonk's necessary thixotropic materials and contrary to the requirements of claim 1 that a shear-thinnable mixture is formed.

- Otsuka et al. teach against the use of a prill head with nozzles (holes) (Col. 1, lines 53-57). This teaching is incompatible with the apparatus of Hoogendonk, the process of Franken et al., and contrary to the requirements of claim 1 that the shear-thinned mixture is permitted to flow through holes in the prill head.

- The apparatus of Hoogendonk requires "...at least one rotatory element rolling along the inner wall of said vessel..." (Col.2, lines 52-53) whereas Franken et al. require that the blades of the pump impeller are at a distance from the wall of the reservoir (Col. 2, lines 18-23).

One of the tests for whether a combination of references is appropriate is the following:

"The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, not in applicants disclosure." *In re Vaeck*, 947, F.2d 488, 20 USPQ2d 1438, (Fed. Cir. 1991)

It is submitted that the incompatibility of Otsuka et al. with Hoogendonk and Franken et al. and the incompatibility of Hoogendonk with Franken et al. demonstrates that a combination of Hoogendonk, Franken et al. and Otsuka fails this test.

In other respects, the disclosures of Hoogendonk and Franken et al. fail to teach essential aspects of the present invention.

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- Neither Hoogendonk nor Franken et al. teach reacting components at a temperature and for a time sufficient to form a shear-thinnable mixture.

- Neither Hoogendonk nor Franken et al. teach mechanically agitation of a shear-thinnable mixture wherein essentially the entire liquid volume is swept by an agitator. Hoogendonk discloses a rotatory element which may function as an agitator if the rotation speed is sufficient (not disclosed), but which does not sweep the entire liquid volume. Frenken et al. describe a pump in the prill head rather than an agitator. An agitator causes mixing throughout a vessel. The vane pump described by Franken et al. imparts a uniform rotary motion to the fluid in each segment of the pump without mixing the fluid in one segment with that in another.

With respect to Holland et al., it is submitted that the statement at page 55, second paragraph falls short of a flat statement that all thixotropic materials are shear-thinning. Holland et al. appear to be expressing a probability. Therefore, the combination of Hoogendonk and Holland et al. fails to teach shear-thinning with the necessary degree of certainty.

"The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic" *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed.Cir. 1993)

It is submitted that the situation with respect to the references cited against claim 1 are as summarized in the following table.

References Cited	Reaction to form Shear-thinnable Mixture	Prill Head	Agitation of Entire Volume in Prill Head
Hoogendonk	No	Yes	No
Frenken et al.	No	Yes	No
Otsaka et al.	No	No	No

In summary, it is respectfully submitted that the combination of Hoogendonk, Frenken et al. and Otsaka et al. is inappropriate as the references are incompatible, and the references fail the requirement to teach all of the limitations of claim 1 of the present

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invention. Therefore, a *prima facie* case of obviousness has not been made.

Reconsideration and withdrawal of the rejection under 35 U.S.C. 103(a) of claims 1 and claims 2 -10 dependent thereon, as being unpatentable over Hoogendonk in view of Holland et al., Frenken et al. and Otsuka et al., is earnestly requested.

6. Claim 15 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk, U.S.P. 3,083,406, in view of Holland et al. (1995), Frenken et al., U.S.P. 3,988,398 and Otsuka et al., U.S.P. 3,539,326 as applied to claims 1-10, further in view of Basseti et al., U.S.P. 5,378,259.

Claims 16 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk, U.S.P. 3,083,406, in view of Holland et al. (1995), Frenken et al., U.S.P. 3,988,398 and Otsuka et al., U.S.P. 3,539,326 as applied to claims 1-10, further in view of Stengel, U.S.P. 3,021,207.

It is respectfully submitted that the rejection of independent claim 1 under 35 U.S.C. 103(a) should be withdrawn for the reasons discussed above. As claims 15-17 are indirectly dependent on claim 1, the rejection of these claims under 35 U.S.C. 103(a) is also earnestly requested.

7. In Examiner's communication dated 06/18/2002 (Paper No. 6), amendments to the specification and to claim 1 similar to those submitted here was objected to under 35 U.S.C. 132 as introducing new matter into the disclosure. The phrase objected to was "mechanically agitating the shear-thinnable mixture at a rate of at least 200 revolutions per minute." That objection was renewed in the communication dated 01/17/2003 (Paper No. 14). Examiner has noted that the original specification discloses "...200 RPM...provides sufficient shear" and that the examples of the patent show speeds of 200 RPM (Inventive Example 2), 500 RPM (Inventive Example 1) and 600 RPM (Inventive Example 3 following Comparative Example C). Examiner has suggested that only a closed RPM range is supported by the disclosure.

The Summary of the Invention and claim 1 have been amended here to read in part, "mechanically agitating said shear-thinnable mixture at a rotational speed of

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greater than about 200 revolutions per minute". However, these amendments do not address the Examiner's objection to a RPM range that has an open upper end. That objection is respectfully traversed. Examiner's response has not considered all of the support in the specification for a range of "greater than about 200 RPM" as introduced here. The specification states the problem to be solved as follows on at page 4.

"The problem to be solved is to provide a method to prill mixtures which can shear thin without requiring expensive new equipment or additional steps. The invention solves this problem by prilling in which mechanical agitation in the prill head itself reduces the viscosity of the mixture via the mechanism of shear thinning."

At page 4, lines 18-21: "The key to the invention is the introduction of agitation into the prill head which introduces shear thinning to the high viscosity molten mixture. The shear thinning agitation reduces the viscosity sufficiently to permit flow through the prill holes to occur ..."

At page 4, lines 11-14: "Figure 2 shows rheological data for an equimolar ammonium nitrate (AN)/ammonium sulfate (AS) melt slurry. At very low shear frequency, the viscosity of the mixture is extremely high. As the shear frequency increases, there is a dramatic decrease in viscosity."

It is submitted that Figure 2 demonstrates that there is a lower limit on shear that can be usefully employed ("...200 RPM...provides sufficient shear") and also that there is no upper limit on shear. That is clearly in accord with the commonly understood nature of a shear thinning fluid.

In view of the teachings cited above, it is submitted that the phrase "mechanically agitating the shear-thinnable mixture at a rate of greater than about 200 revolutions per minute" is inherently supported by the full disclosure of the specification. It is further submitted that the statement of the problem to be solved, and the stated "key to the invention" provides a clear instruction to the man of ordinary skill in art to employ as high a level of shear (agitation) as is necessary to reach the desired result.

8. In light of the foregoing amendment and remarks, it is submitted that claim 1 and claims 2-10 and 15-17 dependent thereon are allowable and should be passed to issue.

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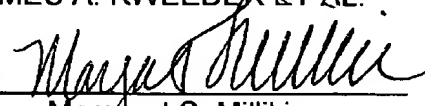
Applicants respectfully request the same. The Examiner is invited to call the undersigned attorney if there are any unresolved issues to discuss same.

This is intended to be a complete response to the Office action mailed January 17, 2003.

Respectfully submitted,

JAMES A. KWEEDER ET AL.

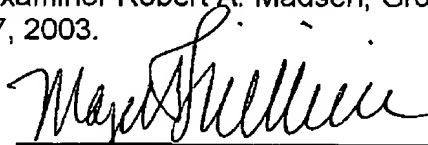
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I hereby certify that this correspondence is being deposited with the United States Patent and Trademark Office via facsimile to Examiner Robert A. Madsen, Group Art Unit 1761, at RightFax No. 703-872-9310, on April 17, 2003.


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